APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/701,540	11/05/2003	Timothy J. Moulsley	PHB 34,266C	8237

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EXAMINER
TORRES, JOSEPH D

ART UNIT	PAPER NUMBER
2133	

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/701,540	MOULSLEY, TIMOTHY J.
	Examiner	Art Unit	
	Joseph D. Torres	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>09 December 2004</u>.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4 and 11-32* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4 and 11-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>05 November 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☒ Certified copies of the priority documents have been received in Application No. <u>09/348,958</u>.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1.   In view of the amendment filed 12/09/2004, all objections to the drawings are

withdrawn.

Claim Objections

2.   In view of the amendment filed 12/09/2004, all objections to the claims in the

previous Office Action are withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3.   Claims 1, 3, 11-13, 15-19 and 27 are rejected under 35 U.S.C. 102(a) as being

anticipated by the 3GPP document (3rd Generation Partnership Project

(3GPP);Technical Specification Group (TSG) Radio Access Network (RAN); Working

Group 1 (WG1); Multiplexing and channel coding (FDD), TS 25.212 V1.0.0 (1999-04)).

35 U.S.C. 102(a) rejection of claims 1 and 27.

3GPP document teaches a coding circuit configured to generate a coded output from a digital input (see Channel coding device in Figure 4-1 on page 9 of the 3GPP document); an interleaving circuit configured to generate a plurality of interleaved words from said coded output (see 1st interleaving device in Figure 4-1 on page 9 of the 3GPP document); and a rate matching circuit for adjusting the number of bits in a data block comprising said plurality of interleaved words, the coded output having a greater number of bits than the digital input, the rate matching circuit having means for adjusting the number of bits in the data block using a rate matching pattern to provide data bits for transmission during respective frames of a transmission channel (see Rate matching device in Figure 4-1 on page 9 of the 3GPP document), and means for selecting the rate matching pattern depending on an associated bit deletion or repetition pattern (see Rate matching section on page 19 of the 3GPP document) that is selected to ensure that deleted or repeated bits of the data block are not required to enable all bits from the digital input to be reconstructed (the Rate matching section on page 19 of the 3GPP document emphasizes quality of transmission requirements, which can only be achieved by ensuring none of the required bits for error correction coding are lost, that is by ensuring sufficient bits to reconstruct the original data exist at the decoder).

35 U.S.C. 102(a) rejection of claim 3.

Separate rate matching units are provided for each sub-block of a parallel input stream in Figure 4-1 on pager 9 of the 3GPP document.

35 U.S.C. 102(a) rejection of claim 11.

Note: the data rate of a convolutional coder is a function of the constraint length of the convolutional coder, and the final rate of the transmitter of Figure 4-1 on page 9 of the 3GPP document is a function of the data rate of a convolutional coder; hence is also a function of the constraint length of the convolutional coder.

35 U.S.C. 102(b) rejection of claims 12 and 13.

Figure 4-1 on page 9 of the 3GPP document teaches additional coding devices as in claims 12 and 13.

35 U.S.C. 102(a) rejection of claim 15.

The convolutional encoder on page 12 in the 3GPP document encompasses fixed rate encoders.

35 U.S.C. 102(b) rejection of claims 16-18.

The Interelaver in the 3GPP document is not adaptive and any interleaver inherently has a constant bit rate.

35 U.S.C. 102(a) rejection of claim 19.

See Rate matching section on page 19 of the 3GPP document.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set
forth in section 102 of this title, if the differences between the subject matter sought to be patented and
the prior art are such that the subject matter as a whole would have been obvious at the time the
invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating
        obviousness or nonobviousness.

4.   Claims 4, 20, 22, 23, 25, 26 and 28 are rejected under 35 U.S.C. 103(a) as being

unpatentable over the 3GPP document (3rd Generation Partnership Project

(3GPP);Technical Specification Group (TSG) Radio Access Network (RAN); Working

Group 1 (WG1); Multiplexing and channel coding (FDD), TS 25.212 V1.0.0 (1999-04)) in

view of Okumura et al. (Okumura, Y.; Adachi, F.; Variable rate transmission and blind

rate detection for coherent DS-CDMA mobile radio, Electronics Letters, Volume:

33, Issue: 24, 20 Nov. 1997, Pages: 2026 – 2027, hereafter referred to as Okumura).

35 U.S.C. 103(a) rejection of claim 4.

The 3GPP document substantially teaches the claimed invention described in claims 1

and 3 (as rejected above).

However the 3GPP document does not explicitly teach the specific use of selecting the rate matching pattern as a function of interleaver depth.

Okumura, in an analogous art, teaches use of selecting the rate matching pattern as a function of interleaver depth (Figure 2 of Okumura teaches that the frame structure is determined by the slot length of the interleaver).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the 3GPP document with the teachings of Okumura by including use of selecting the rate matching pattern as a function of interleaver depth. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of selecting the rate matching pattern as a function of interleaver depth would have provided the opportunity to match interleaved data rates to channel rates.

35 U.S.C. 103(a) rejection of claims 20 and 28.

3GPP document teaches a coding circuit configured to generate a coded output from a digital input (see Channel coding device in Figure 4-1 on page 9 of the 3GPP document); an interleaving circuit configured to generate a plurality of interleaved words from said coded output (see 1st interleaving device in Figure 4-1 on page 9 of the 3GPP document); and a rate matching circuit for adjusting the number of bits in a data block comprising said plurality of interleaved words, the coded output having a greater number of bits than the digital input, the rate matching circuit having means for adjusting the number of bits in the data block using a rate matching pattern to provide data bits for

transmission during respective frames of a transmission channel (see Rate matching

device in Figure 4-1 on page 9 of the 3GPP document), and means for selecting the

rate matching pattern depending on an associated bit deletion or repetition pattern (see

Rate matching section on page 19 of the 3GPP document) that is selected to ensure

that deleted or repeated bits of the data block are not required to enable all bits from the

digital input to be reconstructed (the Rate matching section on page 19 of the 3GPP

document emphasizes quality of transmission requirements, which can only be

achieved by ensuring none of the required bits for error correction coding are lost, that

is by ensuring sufficient bits to reconstruct the original data exist at the decoder).

However the 3GPP document does not explicitly teach the specific use of decoding

after transmission.

Okumura, in an analogous art, teaches use of decoding after transmission (Note: the

Receiver in Figure 1 of Okumura is a decoding device for decoding a signal coded by a

coding device having a rate matching device for adjusting the number of bits in a data

block the data block comprising a plurality of interleaved words generated by the action

of an interleaving circuit on a coded output generated by the action of a coding circuit on

a digital input).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the 3GPP document with the teachings of Okumura by

including use of decoding after transmission. This modification would have been

obvious to one of ordinary skill in the art, at the time the invention was made, because

one of ordinary skill in the art would have recognized that use of decoding after

transmission would have provided the opportunity to decode received data.

35 U.S.C. 103(a) rejection of claims 22 and 23.

Figure 4-1 on page 9 of the 3GPP document teaches additional coding devices as in

claims 12 and 13.

35 U.S.C. 103(a) rejection of claim 25.

The convolutional encoder on page 12 in the 3GPP document encompasses fixed rate

encoders.

35 U.S.C. 103(a) rejection of claim 26.

The Interelaver in the 3GPP document is not adaptive and any interleaver inherently

has a constant bit rate.

5.   Claims 14, 29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable

over the 3GPP document (3rd Generation Partnership Project (3GPP);Technical

Specification Group (TSG) Radio Access Network (RAN); Working Group 1 (WG1);

Multiplexing and channel coding (FDD), TS 25.212 V1.0.0 (1999-04)) in view of Yi;

Byung Kwan (US 5978365 A).

35 U.S.C. 103(a) rejection of claims 14, 29 and 31.

The 3GPP document substantially teaches the claimed invention described in claim 1

(as rejected above).

However the 3GPP document do not explicitly teach the specific use of a puncturing

matrix.

YI, in an analogous art, teaches use of a puncturing matrix (see Figure 15 in Yi).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the 3GPP document with the teachings of Yi by including

use of a puncturing matrix. This modification would have been obvious to one of

ordinary skill in the art, at the time the invention was made, because one of ordinary skill

in the art would have recognized that use of a puncturing matrix would have provided

the opportunity to puncture data for a rate-matching scheme.

6.   Claims 21, 24, 30 and 32 are rejected under 35 U.S.C. 103(a) as being

unpatentable over the 3GPP document (3rd Generation Partnership Project

(3GPP);Technical Specification Group (TSG) Radio Access Network (RAN); Working

Group 1 (WG1); Multiplexing and channel coding (FDD), TS 25.212 V1.0.0 (1999-04))

and Okumura et al. (Okumura, Y.; Adachi, F.; Variable rate transmission and blind rate

detection for coherent DS-CDMA mobile radio, Electronics Letters, Volume: 33, Issue:

24, 20 Nov. 1997, Pages: 2026 – 2027, hereafter referred to as Okumura) in view of Yi;

Byung Kwan (US 5978365 A).

35 U.S.C. 103(a) rejection of claims 21, 24, 30 and 32.

The 3GPP document and Okumura substantially teaches the claimed invention

described in claim 1 (as rejected above).

However the 3GPP document and Okumura do not explicitly teach the specific use of a

puncturing matrix.

YI, in an analogous art, teaches use of a puncturing matrix (see Figure 15 in Yi).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the 3GPP document and Okumura with the teachings of

Yi by including use of a puncturing matrix. This modification would have been obvious

to one of ordinary skill in the art, at the time the invention was made, because one of

ordinary skill in the art would have recognized that use of a puncturing matrix would

have provided the opportunity to puncture data for a rate-matching scheme.

Conclusion

7.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Joseph D. Torres whose telephone number is (571)

272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number

for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published

applications may be obtained from either Private PAIR or Public PAIR. Status

information for unpublished applications is available through Private PAIR only. For

more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).

Joseph D. Torres, PhD
Primary Examiner
Art Unit 2133.